Listing of the claims:

1. (Currently Amended) A method for incrementally coding and ~~signalling~~ signaling motion information for a video compression system involving a motion adaptive transform and embedded coding of transformed video samples using a computer, said method comprising the steps of:
(a) ~~producing~~ storing computer-readable instructions in the computer which, when executed, produce an embedded motion field bit-stream, representing each motion field in coarse to fine fashion; and
(b) ~~interleaving incremental~~ storing computer-readable instructions in the computer which, when executed, interleave successive contributions from said embedded motion ~~fields~~ field bit-stream with ~~incremental~~ successive contributions from said embedded coding of the transformed video samples.

Claims 2-32 (Canceled).

33. (Currently Amended) A system for incrementally coding and ~~signalling~~ signaling motion information for a video compression system involving a motion adaptive transform and embedded coding of transformed video samples, said system comprising:
(a) means for producing an embedded motion field bit-stream, representing each motion field in coarse to fine fashion; and
(b) means for interleaving ~~incremental~~ successive contributions from said embedded motion fields field bit--stream with ~~incremental~~ successive contributions from said embedded coding of the transformed video samples.

34. (Currently Amended) A system for estimating and ~~signalling~~ communicating motion information ~~for~~ required by a multi-frame encoding and decoding system which involves a motion adaptive transform based on temporal lifting steps, said system comprising:
(a) means for estimating and ~~signalling~~ communicating motion parameters describing a first mapping from a source frame onto a target frame within one of the lifting steps; ~~and~~
(b) means for inferring a second mapping within the encoding system between either said source frame or said target frame, and another frame, based on the estimated and ~~signalled~~ signaled motion parameters associated with said first mapping~~.~~; and
(c) means for inferring the second mapping within the decoding system between either said source frame or said target frame and another frame, based on the communicated motion

parameters associated with said first mapping.

35. (New) The system of Claim 33, where the embedded motion field bit-stream is obtained by applying embedded quantization and coding techniques to the motion field parameter values.

36. (New) The system of Claim 33, where the embedded motion field bit-stream is obtained by coding the node displacement parameters associated with a triangular mesh motion model on a coarse to fine grid, each successive segment of the embedded bit-stream providing displacement parameters for node positions which lie on a finer grid than the previous stage, all coarser grids of node positions being subsets of all finer grids of node points.

37. (New) The system of Claim 36, where a coarse to fine motion representation is obtained by first transforming the motion parameters and then coding the transform coefficients using embedded quantization and coding techniques.

38. (New) The system of Claim 37, where the motion parameters are transformed by applying spatial discrete wavelet transforms and/or temporal transforms thereto.

39. (New) The system of Claim 38, wherein the spatial and/or temporal transforms are reversible integer-to-integer transforms, suitable for lossless compression.

40. (New) The system of Claim 33, wherein the embedded motion bit-streams are arranged into a sequence of quality layers, and the transformed video samples are also encoded into embedded bit-streams which are arranged into a separate sequence of quality layers.

41. (New) The system of Claim 33, where said interleaving of the contributions from the embedded motion bit-streams and from the transformed video samples is performed in a manner which minimizes the expected distortion in the reconstructed video sequence at each of a plurality of compressed video bit-rates.

42. (New) The system of Claim 41, where the measure of distortion is Mean Squared Error.

43. (New) The system of Claim 41, where the measure of distortion is a weighted sum of the Mean Squared Error contributions from different spatial frequency bands, weighted

according to perceptual relevance factors.

44. (New) The system of Claim 41, where the distortion associated with inaccurate representation of the motion parameters is determined using an estimate of the spatial power spectrum of the video source.

45. (New) The system of Claim 41, where the distortion associated with inaccurate representation of the motion parameters is determined using information about the spatial resolution at which the video bit-stream is to be decompressed.

46. (New) The system of Claim 44, where the power spectrum of the video source is estimated using spatio-temporal video sample subbands created during compression.

47. (New) The system of Claim 33, wherein the proportions of contributions from said embedded motion fields and said transformed video samples in the embedded bit-stream is determined on the basis of a plurality of tables associated with each frame, each table being associated with a spatial resolution at which the video bit-stream is to be decompressed.

48. (New) The system of Claim 47, wherein the embedded motion bit-streams and the transformed video samples are each encoded as a series of quality layers and the tables identify the number of motion quality layers are to be included with each number of video sample quality layers.

49. (New) The system of Claim 34, where said second mapping is the reciprocal mapping from said target frame to said source frame, for use within another one of the lifting steps.

50. (New) The system of Claim 49, where said reciprocal mapping is the inverse of the first mapping.

51. (New) The system of Claim 50, where the motion parameters of said first mapping correspond to a deformable triangular mesh motion model.

52. (New) The system of Claim 51, where said reciprocal mapping is inferred by inverting the affine transformations associated with the triangular mesh used to represent said first

mapping.

53. (New) The system of Claim 34, where the motion parameters of said first mapping correspond to a block displacement motion model.

54. (New) The system of Claim 34, where said motion adaptive transform involves multiple stages of temporal decomposition, corresponding to different temporal frame rates.

55. (New) The system of Claim 54 where motion parameters at each temporal resolution are deduced from original video frames.

56. (New) The system of Claim 54, wherein said second mapping is a mapping between frames at a lower temporal resolution than said first mapping, and said second mapping is inferred by compositing the first mapping with at least one further mapping between frames at the higher temporal resolution.

57. (New) The system of Claim 54, wherein said second mapping is a mapping between frames at a higher temporal resolution than said first mapping, and said second mapping is inferred by compositing the first mapping with at least one further mapping at the higher temporal resolution.

58. (New) The system of Claim 57, wherein said higher resolution is double said lower resolution, and alternate mappings at the higher temporal resolution are explicitly signaled to a decompressor, the remaining mappings at the higher temporal resolution being replaced by the mappings inferred by compositing the lower resolution mappings with respective higher resolution mappings.

59. (New) The system of Claim 58, where said replaced mappings are used within the lifting steps of said motion adaptive transform, in place of the originally estimated mappings which were replaced.

60. (New) The system of Claim 58, where said replaced mappings are refined with additional motion parameters, said refinement parameters being signaled for use in decompression, and said replaced and refined mappings being used within the lifting steps of said motion adaptive transform, in place of the originally estimated mappings which were

replaced.

61. (New) The system of Claim 34, where inversion or composition of motion transformations is accomplished by applying said motion transformations to the node positions of a triangular mesh motion model, the composited or inverted motion transformation being subsequently applied by performing the affine transformations associated with said mesh motion model.

62. (New) The system of Claim 61, where the source frame is partitioned into a regular mesh and the inversion or composition operations are applied to each node of the regular mesh to find a corresponding location in the target frame, the composited or inverted motion transformation being subsequently applied by performing the affine transformations associated with said mesh motion model.

63. (New) A non-transitory computer-readable storage medium with an executable program stored thereon, wherein the program instructs the computer to implement the method of Claim 1.

64. (New) A non-transitory computer-readable storage medium with an executable program stored thereon, wherein the program instructs the computer to implement the method of Claim 79.

65. (New) The method of Claim 1, where the embedded motion field bit-stream is obtained by applying embedded quantization and coding techniques to the motion field parameter values.

66. (New) The method of Claim 1, where the embedded motion field bit-stream is obtained by coding the node displacement parameters associated with a triangular mesh motion model on a coarse to fine grid, each successive segment of the embedded bit-stream providing displacement parameters for node positions which lie on a finer grid than the previous stage, all coarser grids of node positions being subsets of all finer grids of node points.

67. (New) The method of Claim 66, where a coarse to fine motion representation is obtained by first transforming the motion parameters and then coding the transform coefficients using embedded quantization and coding techniques.

68. (New) The method of claim 67, where the motion parameters are transformed by applying spatial discrete wavelet transforms and/or temporal transforms thereto.

69. (New) The method of Claim 68, wherein the spatial and/or temporal transforms are reversible integer-to-integer transforms, suitable for lossless compression.

70. (New) The method of Claim 1, wherein the embedded motion bit-streams are arranged into a sequence of quality layers, and the transformed video samples are also encoded into embedded bit-streams which are arranged into a separate sequence of quality layers.

71. (New) The method of Claim 1, where said interleaving of the contributions from the embedded motion bit-streams and from the transformed video samples is performed in a manner which minimizes the expected distortion in the reconstructed video sequence at each of a plurality of compressed video bit-rates.

72. (New) The method of Claim 71, where the measure of distortion is Mean Squared Error.

73. (New) The method of Claim 71, where the measure of distortion is a weighted sum of the Mean Squared Error contributions from different spatial frequency bands, weighted according to perceptual relevance factors.

74. (New) The method of Claim 71, where the distortion associated with inaccurate representation of the motion parameters is determined using an estimate of the spatial power spectrum of the video source.

75. (New) The method of Claim 71, where the distortion associated with inaccurate representation of the motion parameters is determined using information about the spatial resolution at which the video bit-stream is to be decompressed.

76. (New) The method of Claim 74, where the power spectrum of the video source is estimated using spatio-temporal video sample subbands created during compression.

77. (New) The method of Claim 1, wherein the proportions of contributions from said embedded motion fields and said transformed video samples in the embedded bit-stream is determined on the basis of a plurality of tables associated with each frame, each table being

associated with a spatial resolution at which the video bit-stream is to be decompressed.

78. (New) The method of Claim 77, wherein the embedded motion bit-streams and the transformed video samples are each encoded as a series of quality layers and the tables identify the number of motion quality layers are to be included with each number of video sample quality layers.

79. (New) A method for estimating and communicating motion information required by a multi-frame encoding and decoding system which involves a motion adaptive transform based on temporal lifting steps using a computer, said method comprising the steps of:
(a) storing computer-readable instructions in the computer which, when executed, estimate and communicate motion parameters describing a first mapping from a source frame onto a target frame within one of the lifting steps;
(b) storing computer-readable instructions in the computer which, when executed, infer a second mapping within the encoding system between either said source frame or said target frame, and another frame, based on the estimated and communicated motion parameters associated with said first mapping; and
(c) storing computer-readable instructions in the computer which, when executed, infer the second mapping within the decoding system between either said source frame or said target frame and another frame, based on the communicated motion parameters associated with said first mapping.

80. (New) The method of Claim 79, where said second mapping is the reciprocal mapping from said target frame to said source frame, for use within another one of the lifting steps.

81. (New) The method of claim 80, where said reciprocal mapping is the inverse of the first mapping.

82. (New) The method of Claim 79, where the motion parameters of said first mapping correspond to a deformable triangular mesh motion model.

83. (New) The method of Claim 82, where said reciprocal mapping is inferred by inverting the affine transformations associated with the triangular mesh used to represent said first mapping.

84. (New) The method of Claim 79, where the motion parameters of said first mapping correspond to a block displacement motion model.

85. (New) The method of Claim 79, where said motion adaptive transform involves multiple stages of temporal decomposition, corresponding to different temporal frame rates.

86. (New) The method of Claim 85 where motion parameters at each temporal resolution are deduced from original video frames.

87. (New) The method of Claim 85, wherein said second mapping is a mapping between frames at a lower temporal resolution than said first mapping, and said second mapping is inferred by compositing the first mapping with at least one further mapping between frames at the higher temporal resolution.

88. (New) The method of Claim 85, wherein said second mapping is a mapping between frames at a higher temporal resolution than said first mapping, and said second mapping is inferred by compositing the first mapping with at least one further mapping at the higher temporal resolution.

89. (New) The method of Claim 88, wherein said higher resolution is double said lower resolution, and alternate mappings at the higher temporal resolution are explicitly signaled to a decompressor, the remaining mappings at the higher temporal resolution being replaced by the mappings inferred by compositing the lower resolution mappings with respective higher resolution mappings.

90. (New) The method of Claim 89, where said replaced mappings are used within the lifting steps of said motion adaptive transform, in place of the originally estimated mappings which were replaced.

91. (New) The method of Claim 89, where said replaced mappings are refined with additional motion parameters, said refinement parameters being signaled for use in decompression, and said replaced and refined mappings being used within the lifting steps of said motion adaptive transform, in place of the originally estimated mappings which were replaced.

92. (New) The method of Claim 79, where inversion or composition of motion transformations is accomplished by applying said motion transformations to the node positions of a triangular mesh motion model, the composited or inverted motion transformation being subsequently applied by performing the affine transformations associated with said mesh motion model.

93. (New) The method of Claim 92, where the source frame is partitioned into a regular mesh and the inversion or composition operations are applied to each node of the regular mesh to find a corresponding location in the target frame, the composited or inverted motion transformation being subsequently applied by performing the affine transformations associated with said mesh motion model.